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ABSTRACT

The creative oral language elicited from 45 preoperational and 40 concrete operational first grade students was analyzed to study the relationship between cognitive development and the types of case relationships produced. Each child's language was analyzed for eight noun/verb relationships, including state, process, action, experience, location, direction, duration, and instrumentals. The findings indicated that the type of language a child produces is limited by the child's cognitive capacity. The preoperational youngsters produced more static language because they were functioning with static and immobile thought. The concrete operational subjects, on the other hand, were more used to operating with dynamic thought processes, so their language reflected a more dynamic nature, such as the increased production of extranuclear sentence elements like locatives, ablatives, durations, and instrumentals. (RL)

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CASE RELATIONSHIPS IN THE CREATIVE ORAL LANGUAGE OF PREOPERATIONAL AND CONCRETE OPERATIONAL FIRST GRADERS

Patrick P. McCabe

INTRODUCTION

In this investigation, the act of reading was seen as a psycholinguistic process where a reader interacts with printed material in order to recreate the meaning which an author intended. In this framework, the reader is not seen as a passive recipient of written language, but is seen as someone who is constantly striving to make sense of the material through the use of various cues supplied by an author. Those cues may be of a conceptual (where similar experiences are shared), syntactic, or graphic nature. Therefore when a reader is presented with familiar cues, communication is facilitated; it is inhibited when unfamiliar cues are used on the part of the author.

THEORETICAL FRAMEWORK

This investigation drew upon three areas of research for its rationale. The theory of case relationships as articulated by Chafe (1970), Fillmore (1968), and Anderson (1971) was the first area. These theorists suggested certain

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intraclausal roles which nouns fill in relation to verbs as one way to begin to describe the semantic structure of language. Fillmore (1968) described such case relationships as "... universal, probably innate concepts which identify certain types of judgments that human beings are capable of making about events that are going on around them." These roles are: (1) action-agent, (2) state-patient, (3) process-patient, (4) experiential-experiencer, (5) locative, (6) ablative/allative, (7) duration, and (8) instrumental. Empirical evidence for the case notions indicated above came from studies conducted by Shafto (1973), Kintsch and Keenan (1973), Fairweather (1975), and Suci and Hamacher (1977). These investigators explained the data from their studies in terms of the notions of case relationships. They suggested that an examination of these roles offered a more satisfactory explanation of their data than an examination of the structure of the language presented to the subjects in terms of the positions of the various sentence elements such as subject and object.

The second area of research came from the field of language acquisition. Researchers such as Sinclair (1971), Slobin (1973), Menyuk (1977), Bloom (1970), and Bowerman

(1973) suggested that the acquisition of language is based upon a cognitive readiness. They felt that youngsters tend to acquire the verbal representation of a concept after they have demonstrated non-verbal representation of that concept. The work of Parisi and Antinucci (1973), Brown (1973), Grimm (1975), and Kahn (1975) supported the theory of language acquisition based upon cognition.

The third area from which this investigation comes was drawn from the Piagetian model of intellectual development (Flavell, 1963). In this model, youngsters go through a sequence of developmental thought processes. The two stages focussed upon in this investigation were the preoperational and the concrete operational stages. These two developmental levels can be differentiated in terms of static and dynamic thought processes. Concrete operational youngsters can conserve (hold in mind one attribute in the face of perceptual transformation of a second attribute); youngsters who are at a preoperational stage of development cannot yet demonstrate this ability. Empirical evidence for this model comes from the work of Elkind (1961, 1964), Goodnow (1962), and Goodnow and Bethon (1966).

METHODS

Purpose

The purpose of this investigation was to determine the relationship between cognitive development and the types of case relationships produced in the creative oral language of preoperational and concrete operational first graders.

Hypotheses

The following hypotheses were tested:

(1) Preoperational (P) subjects will produce significantly more state-patient relationships than concrete operational (C) subjects at the .05 level of probability.

(2) C subjects will produce significantly more process-patient relationships than P subjects at the .05 level of probability.

(3) P subjects will produce significantly more action-agent relationships than C subjects at the .05 level of probability.

(4) C subjects will produce significantly more experiential-experiencer relationships than P subjects at the .05 level of probability.

(5) P subjects will produce significantly more locative type constructions than C subjects at the .05 level

of probability.

(6) C subjects will produce significantly more ablative/allative constructions than P subjects at the .05 level of probability.

(7) C subjects will produce significantly more duration constructions than P subjects at the .05 level of probability.

(8) C subjects will produce significantly more instrumental constructions than P subjects at the .05 level of probability.

Subjects

Forty-five preoperational and forty concrete operational first graders served as the subjects in this investigation. These subjects were drawn from two elementary schools in the [redacted] School district located [redacted]. This was a predominantly white, middle class area.

Instruments

Two sets of instruments were employed for the purposes of this investigation. The first set was directed toward the determination of level of operational thought, while the second set was directed toward language elicitation.

Level of operational thought. In individual sessions, the entire first grade population of one school was given three tasks of cognitive development suggested by Piaget and his followers as indicators of operational thought. One task assessed ability to conserve the concept of number. A second task assessed the ability to conserve the concept of weight. The third task assessed the ability to classify on the basis of two attributes of an object at the same time. Subjects who performed satisfactorily on all three tasks were considered to be concrete operational. Subjects who did not perform satisfactorily on all three tasks were considered to be preoperational in development.

This procedure yielded thirty-five concrete operational and forty preoperational subjects in one school. Since this fell short of the desired forty in each group, additional subjects were selected on a random basis from a second school in the same school district with similar population. This school had also served as the school where the pilot investigations were conducted, but all pilot subjects were excluded from the screening procedure. In was necessary to screen nineteen subjects in order to obtain the necessary five additional concrete operational subjects.

Language elicitation. The three pictures with the highest language elicitation value according to the Manzo-Legenza Picture Potency formula (Manzo and Legenza, 1975) among the pool of those submitted by first grade teachers were used in this phase of the study. The subjects were presented with these pictures in sequential order and were asked, in groups of three, to "make up a pretend story" for each. This was done in a smaller room away from the subjects' classroom. As they responded to each picture, the subjects were encouraged to become verbal through the use of probing questions on the part of the investigator.

Each of the three subjects was then given crayons and paper and was instructed to draw a picture about whatever they wanted. They were also instructed to be prepared to tell the investigator a pretend story based on their picture. The subjects were told they were not to copy from each other or from a story which they already knew. The subjects were instructed to create a "brand new" pretend story at this point.

As each subject finished, he or she told the investigator their story which was tape-recorded in full view of the subjects. This language was then transcribed and segmented into

t-units described by Hunt (1965) as an independent clause with all subordinate clauses attached to it. This language was then analyzed according to the following notions of case relationships:

(1) State-patient. Where a noun (patient) is in a certain state or condition indicated by the verb. Examples are: "The leaf is dry" and "The floor is wet."

(2) Process-patient. Where the noun (patient) undergoes a change of state or condition indicated by the verb. Examples are: "The snow melted" and "The wood dried."

(3) Action-agent. Where a noun (an agent) performs the action indicated by the verb. Examples are: "Harriet sang" and "John ran."

(4) Experiential-experiencer. Where the noun (the experiencer) is mentally disposed in some way indicated by the verb. Experiental verbs may be states or process as indicated in the following examples:

a. Experientials as states

"Tom wanted a drink" or "Tom knew the answer."

b. Experientials as processes

"Tom heard the owl" and "Tom felt the needle."

(5) Locative-location. Where a location is indicated. An example is "The knife is in the box."

(6) Ablative/allative. Where direction towards or coming from is indicated. Examples are: "The man is leaving the house" and "The man is coming to the house."

(7) Duration. Where a length of time is indicated. For example, "The man jogged for an hour."

(8) Instrumental. Where an adjunct to the agent is indicated. An example is "The man hit the ball with the bat."

STATISTICAL ANALYSIS

Eight t-tests were employed to analyze the results.

RESULTS

The results indicated that although two of the hypotheses were supported and six were not, five of the findings were in the direction predicted by the hypotheses. More specifically,

(1) P subjects produced significantly more state-patient relationships than C subjects, as predicted.

(2) C subjects produced significantly more process-patient relationships than P subjects, as predicted.

(3) P subjects did not produce significantly more action-agent relationships than C subjects, as predicted. The mean number of action-agent relationships was, in fact, greater for the C subjects than it was for the P subjects.

(4) C subjects did not produce significantly more experiential-experiencer relationships than P subjects, as predicted. P subjects produced a greater number of such constructions, although not to a significant degree, contrary to the direction predicted.

(5) P subjects did not produce significantly more locative constructions than C subjects, as predicted. C subjects did, in fact, produce a greater number of such relationships, contrary to expectations.

(6) C subjects did not produce significantly more ablative and allative constructions than P subjects, as predicted. C subjects did, however, produce more of these constructions, consistent with predictions.

(7) C subjects did not produce significantly more duration constructions than P subjects, as predicted. C subjects did, however, produce more duration constructions

than P subjects, consistent with predictions, although the total amount of duration constructions produced was not very great.

(8) C subjects did not produce significantly more instrumental constructions that P subjects, as predicted. C subjects did, however, produce more of these constructions consistent with expectations.

Table one (below) demonstrates the results of the findings of this investigation.

Table 1 to be inserted about here

DISCUSSION OF THE RESULTS

The results of this investigation were interpreted as being consistent with Piaget's model of development (Flavell, 1963) and with Lyons' description of static and dynamic features of language (Lyons, 1974) on a linguistic level. Although six of the hypotheses were unsupported, they were interpreted in terms of static and dynamic aspects of language. When examined in these terms, they appeared to be explained within a consistent framework. As predicted, there was a signif-

Table 4

Results of Hypothesis Testing

Hypothesis Number	Case Relationship	Mean No. per t-unit		Computed "t"	Hypothesis Determination
		P	C		
1	State-patient	.6809	.4473	2.7967*	Accepted
2	Process-patient	.5593	.7030	-1.7083*	Accepted
3	Action-agent	.6469	.7053	-.7113	Accepted
4	Experiential-experiencer	.1311	.0808	1.2724	Not Accepted
5	Locative	.1111	.1423	-.8334	Not Accepted
6	Ablative/allative	.1811	.1998	-.4414	Not Accepted
7	Duration	.0000	.0063	-1.5094	Not Accepted
8	Instrumental	.0000	.0020	-1.0615	Not Accepted

(The critical value of "t" on 83 degrees of freedom with a one tailed test of significance at the .05 level of probability is 1.671.)

icant difference in the language of the preoperational and the concrete operational subjects when state-patient and process-patient relationships were examined. The more developmentally advanced subjects used more of the dynamic process-patient relationships than did the preoperational subjects who were less developmentally advanced, according to Piaget's model.

The investigator suggested that the type of language produced was limited by the cognitive capacity of the language producer. In other words, based on the data from this investigation, it appeared that the concrete operational subjects were able to use language which reflected their cognitive capacities in terms of dynamic aspects. A process-patient construction, since it indicates change is more dynamic than a state-patient relationship which does not indicate change, but indicates a present state. More action-agents were produced by the concrete operational subjects since these constructions are dynamic in the same sense that the process-patient constructions were dynamic.

The experiential category was considered to be one aspect of the static-dynamic category and therefore subsumed by either of these two classifications.

The findings also indicated that the concrete operational subjects were more likely to produce "extranuclear" (Lyons, 1974)

sentence elements, such as locatives, ablatives, durations, and instrumentals. This was explained in terms of concatenating sentence elements. The investigator suggested that the concrete operational subjects were more able and more likely, therefore, to add "extranuclear elements" to the "nuclear" elements of the sentence. ("Extranuclear" elements are not essential to the meaning and serve to locate the sentence in terms of space and time, for example. "Nuclear" elements, on the other hand, are obligatory and essential to the meaning of the sentence; the subject and object are obligatory.)

The language produced by all the subjects in this investigation was felt to be a function of subjects' "cognitive predisposition." This means that the language which was porduced under the circumstances of the study, was a direct reflection of the type of thought the subjects were accustomed to operating with. Preoperational youngsters produced more static language because, as Piaget described it, they are functioning with static and immobile thought (Flavell, 1963). Concrete operational subjects, on the other hand, are more used to operating with dynamic thought processes and, therefore, their language reflected a more dynamic nature--process-patient constructions, for example.

IMPLICATIONS

The results of this study have implications for early childhood education. If it is assumed that readers are constantly searching for familiar cues with which to reconstruct an author's meaning and are not merely passive recipients of words on the page, then case relationships might be one cuing system which can have an effect on the degree of cummunication between and author and a reader of a message. Material presented to youngsters at the preoperational level which is dynamic in nature should follow appropriate readiness activities.

In order to be sure that preoperational youngsters comprehend the concept of change, direct experience with the concept should be arranged. In a story about a character who "got lost," a process type construction, pictures might precede or accompany the story in which each of the successive stages of "becoming lost " were depicted. Since the preoperational subjects in this investigation appeared to be less facile with process-patient constructions than the concrete operational subjects, they might have difficulty comprehending such constructions when presented to them. Ablative and allative constructions, for example, might be read aloud correctly by a preoperational youngster, but not really understood by them due to their level of cognitive development.

Since, in this investigation, language appeared to be mapped onto cognition, as Bowerman (1973), for one suggested, dynamic type language; that is language which hints at (1) "movement," as in the ablative constructions, or (2) "change," as in the process-patient constructions, should not be presented to preoperational youngsters without the necessary prerequisite cognitive preparation on a non-verbal level. Before reading about the process by which an ice cube melts, direct experience with this concept should be arranged, especially with preoperational youngsters.

SUGGESTIONS FOR FURTHER RESEARCH

One further investigation might examine the stability of the "cognitive predisposition" concept noted earlier. Language produced in other settings, such as in a playground or cafeteria setting might provide evidence to support or to question the consistency with which the type of language found in this investigation will be produced.

A second investigation might examine the effect on comprehension scores of preoperational and concrete operational subjects when presented with passages written in both static and dynamic language.

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